J97P0900US01

PATENT
Attorney Docket No.: 450100-4138.1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.: 09/844,354   EXAMINER: Brown, Rueben M.

FILING DATE: April 27, 2001   CONFIRMATION No.:3992

TITLE: INFORMATION PROVIDING APPARATUS AND METHOD, DISPLAY CONTROLLING APPARATUS AND METHOD, INFORMATION PROVIDING SYSTEM, AS WELL AS TRANSMISSION MEDIUM

Hon. Commissioner of Patents and Trademarks,
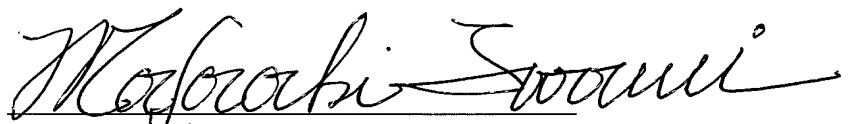   Washington, D.C. 20231

S I R:

CERTIFIED TRANSLATION

I, Masaaki Iwami of 3-22, Asagaya-minami 1-chome, Suginami-ku, Tokyo, Japan, am an experienced translator of the Japanese language into the English language and I hereby certify that the attached comprises an accurate translation into English of Japanese Patent Application No. 8-270916 filed October 14, 1996.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

September 2, 2008

Date

Masaaki IWAMI

[NAME OF THE DOCUMENT]   Specification

[TITLE OF THE INVENTION]   Information Providing System and Information Providing Method, as Well as Information Displaying Apparatus

[CLAIMS]

[Claim 1]   An information providing system, characterized in that it comprises

first providing means for providing first information composed of hierarchized data,

second providing means for providing second information regarding a layout when the first information is to be displayed on a screen,

first producing means for extracting predetermined data of the data which composes the first information to produce third information, and

second producing means for producing fourth information based on the third information and the second information.

[Claim 2]   An information providing system according to claim 1, characterized in that

said first providing means provides the first information in hierarchies divided depending upon a type of the data which composes the first information.

[Claim 3]   An information providing system

according to claim 2, characterized in that

the hierarchies are composed of a first hierarchy composed of data which may possibly be changed, a second hierarchy composed of data which may not possibly be changed, and a third hierarchy composed of a combination of a plurality of data whose information amounts are different from each other, and

the data of the first hierarchy refers to the data of the second hierarchy, and the data of the second hierarchy refers to the data of the third hierarchy.

[Claim 4] An information providing system according to claim 3, characterized in that

said first providing means provides, when the data of the first hierarchy is changed, new data after the change in a superposed relationship with a vertical blanking period of a television signal.

[Claim 5] An information providing system according to claim 3, characterized in that

the third hierarchy is composed of at least one of character data, still picture data, moving picture data and voice data.

[Claim 6] An information providing system according to claim 1, characterized in that

the third information is composed of a first

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hierarchy composed of data corresponding to a layout of the screen defined by the second information and a second hierarchy composed of sorted data which designates predetermined information of the first information which is to be displayed in a predetermined region of the screen, and

the data of the first hierarchy refers to the data of the second hierarchy.

[Claim 7] An information providing system according to claim 1, characterized in that

the fourth information is an electronic program guide, and said information providing system further comprises converting means for performing display conversion processing for the fourth information.

[Claim 8] An information providing method, characterized in that

first information composed of hierarchized data is provided,

second information regarding a layout when the first information is to be displayed on a screen is provided,

predetermined information is extracted from the first information to produce third information, and

fourth information is produced based on the third

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information and the second information.

[Claim 9] An information displaying apparatus, characterized in that it comprises

first acquiring means for acquiring first information composed of hierarchized data,

second acquiring means for acquiring second information regarding a layout when the first information is to be displayed on a screen,

first producing means for extracting predetermined information from the first information to produce third information,

second producing means for producing fourth information based on the third information and the second information, and

display controlling means for performing display conversion processing for the fourth information so as to be displayed on the screen.

[Claim 10] An information displaying apparatus according to claim 9, characterized in that it further comprises

display means for displaying the fourth information.

[Claim 11] An information displaying apparatus according to claim 9, characterized in that the fourth

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information is information corresponding to an electronic program guide, and said display controlling means performs display conversion processing for the fourth information and displays the electronic program guide.

[DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[Technical Field to Which the Invention Belongs]

This invention relates to an information providing system and an information providing method, as well as an information displaying apparatus, and relates to an information providing system and an information providing method, as well as an information displaying apparatus by which, when, for example, data of a program table composed of characters and images are to be transmitted, the amount of data to be transmitted is reduced and a change of the program table can be performed rapidly.

[0002]

[Prior Art]

Conventionally, in order to get a program table of a television, a television program column of a newspaper or a magazine is referred to. Meanwhile, in recent years, it has been increased to practice to provide a program table through the Internet. In this instance, a program table is described in a describing language such as the HTML (Hyper

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Text Markup Language). A user can observer the program table using a predetermined browser. Further, it is also possible to provide data of the program table by media such as broadcasting radio waves or the like.

[0003]

[Subject to Be Solved by the Invention]

However, a program table provided through the Internet is described in a describing language such as the HTML, and image data or the like are sometimes included in the program table. Further, in such a case that a program table includes, for example, a re-forecast program, since data overlap, there is a subject that the data amount is large and a considerable time is required for transmission or reading in of the data.

[0004]

Further, there is another subject that, when the broadcasting date or the broadcasting time of a predetermined program in a program table or contents of a program are changed, much time is required since it is required to change all portions relating to the program and re-send data of the changed portions.

[0005]

The present invention has been made in view in such circumstances as described above, and reduces the amount of

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data to be transmitted when data of a program table composed of characters and images or the like are to be transmitted and makes it possible to cope with a change in contents of data rapidly.

[0006]

[Means to Solve the Subject]

An information providing system as set forth in claim 1 is characterized in that it comprises first providing means for providing first information composed of hierarchized data, second providing means for providing second information regarding a layout when the first information is to be displayed on a screen, first producing means for extracting predetermined data of the data which composes the first information to produce third information, and second producing means for producing fourth information based on the third information and the second information.

[0007]

An information providing method as set forth in claim 8 is characterized in that first information composed of hierarchized data is provided, second information regarding a layout when the first information is to be displayed on a screen is provided, predetermined information is extracted from the first information to

produce third information, and fourth information is produced based on the third information and the second information.

[0008]

An information displaying apparatus as set forth in claim 9 is characterized in that it comprises first acquiring means for acquiring first information composed of hierarchized data, second acquiring means for acquiring second information regarding a layout when the first information is to be displayed on a screen, first producing means for extracting predetermined information from the first information to produce third information, second producing means for producing fourth information based on the third information and the second information, and display controlling means for performing display conversion processing for the fourth information so as to be displayed on the screen.

[0009]

[Means to Solve the Subject]

In the information providing system as set forth in claim 1, the first providing means provides first information composed of hierarchized data, and the second providing means provides second information regarding a layout when the first information is to be displayed on a

screen. Then, the first producing means extracts
predetermined data of the data which composes the first
information to produce third information, and the second
producing means produces fourth information based on the
third information and the second information.

[0010]

In the information providing method as set forth in
claim 8, first information composed of hierarchized data is
provided, and second information regarding a layout when
the first information is to be displayed on a screen is
provided. Then, predetermined information is extracted
from the first information to produce third information,
and fourth information is produced based on the third
information and the second information.

[0011]

In the information displaying apparatus as set
forth in claim 9, the first acquiring means acquires first
information composed of hierarchized data, and the second
acquiring means acquires second information regarding a
layout when the first information is to be displayed on a
screen. Then, the first producing means extracts
predetermined information from the first information to
produce third information, and the second producing means
produces fourth information based on the third information

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and the second information, and the display controlling

means performs display conversion processing for the fourth

information so as to be displayed on the screen.

[0012]

[Embodiment of the Invention]

FIG. 1 shows an example of a construction of an

embodiment of an AV (audio visual) system to which an

information providing system of the present invention is

applied. A CD-ROM (compact disc read only memory) drive 1

is constructed so as to read, for example, program

information and data regarding a layout of a program table

recorded on an electronic program guide CD-ROM 6

(hereinafter referred to suitably as CD-ROM 6) (first

providing means, second providing means) on which an

electronic program guide which is published every week is

recorded.

[0013]

Further, the CD-ROM drive 1 produces data for

displaying a program table on a screen based on data read

out from a CD-ROM 6 or program information superposed on a

television signal of a predetermined channel supplied from

an antenna not shown and supplies the data to a television

receiver 5 (display means). A mouse 2 is operated when a

user tries to select a channel or effect program

reservation while observing a program table displayed on the television receiver 5.

[0014]

Data regarding a program table is composed of, as hereinafter described, original data (hereinafter referred to as A data), intermediate data (hereinafter referred to as B data), display data (hereinafter referred to as C data) and screen layout data corresponding to each display screen.

[0015]

A PDA (personal digital assistants) unit 4 (display means) is constructed so as to read out program table data from an electronic program guide CD-ROM 8, produce data for displaying a program table, display the program table on a screen of the PDA and select a channel while the program table is observed, and is constructed so as to transmit contents of an operation when to effect program reservation to the television receiver 5 by infrared rays or the like. The television receiver 5 is constructed so as to display an ordinary broadcasting program or display a screen of a program table based on data supplied from the CD-ROM drive 1 or the PDA unit 4.

[0016]

FIG. 2 is a view showing an example of an internal

construction of the CD-ROM drive 1 of FIG. 1. A CD-ROM

driving section 11 (first acquiring means, second acquiring

means) is constructed so as to reproduce a CD-ROM 6 and

output data regarding program information or screen layout

data.

[0017]

A microcomputer 15 (first producing means, second

producing means) includes a memory 18, a browser control

section 19 (display controlling means), a data converting

section 20 (converting means), a graphic engine 17, a VRAM

(video RAM) 16 and so forth. The microcomputer 15 receives

data outputted from the CD-ROM driving section 11, produces

data for displaying a screen of a program table or the like

and outputs the data. The memory 18 stores an application

program and suitably stores other data necessary for

processing.

[0018]

The data converting section 20 is constructed so as

to convert, based on data regarding program information and

screen layout data supplied thereto from the CD-ROM driving

section 11, those data into a describing language (program

processing language) such as the HTML. The browser control

section 19 is constructed so as to produce bit map data of

an EPG screen based on the program language such as the

HTML obtained by the conversion by the data converting section 20 and write the display data into the VRAM 16.

[0019]

The graphic engine 17 is constructed so as to read out or write image data or font data from or into the VRAM 16 at a high speed and perform high speed picture drawing processing of graphic data. A TEL module 14 is formed from a modem or the like and constructed so as to convert an analog signal supplied through a telephone line into digital data and supply the digital data to the microcomputer 15 or convert digital data supplied from the microcomputer 15 into analog data and send out the analog data through the telephone line.

[0020]

FIG. 3 illustrates a procedure wherein inputted information and data of a screen layout for displaying the inputted information are produced and provided to a user and an EPG (Electronic Program Guide) corresponding to the provided data is produced finally. First, program information is inputted and A data (original data) composed of A1 data, A2 data and A3 data are produced by a data editor. Then, a layout of a screen for displaying a program table or detailed information of a program is inputted using a layout editor to produce screen layout

data. Here, while it is described that program information
and data of a screen layout for displaying the program
information are inputted, other information may naturally
be inputted.

[0021]

For example, in such a case that a program having a
program name of "The Sunflower" is to be broadcast at 12
o'clock and re-broadcast at 17 o'clock, the data editor
inputs program information of "The Sunflower", produces two
A1 data for regular broadcasting and for re-broadcasting,
and produces A2 data to be referred to commonly by those A1
data. Further, also A3 data formed from more detailed data
to be referred to by the A2 data is produced.

[0022]

Each of the A1 data is composed of data whose
broadcasting date, broadcasting time or the like may
possibly be changed, and the A2 data is composed of fixed
information which may not possibly be changed such as a
program name and a sub title, serial numbers to be used to
refer to data such as performers, program detail
information, still pictures, voice, and moving pictures.
Further, the A3 data is substantial data of still pictures,
voice, moving pictures and so forth, and the data amount
can be adjusted by changing the combination in accordance

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with a medium by which those data are to be provided. The
A3 data is referred to by the A2 data.

[0023]

In particular, for example, as seen in FIG. 4(A),
the A1 data includes kinds of data for regular
broadcasting, for re-broadcasting and so forth, and is
composed of data representative of "A1 DATA TAG"
representing that the data is A1 data, "A1 DATA SERIAL NO."
representative of a serial number of the A1 data, "A2 DATA
SERIAL NO." for referring to A2 data, a "BROADCASTING
DATE", a "START TIME", an "END TIME", a "BROADCASTING
STATION", a "PROGRAM CATEGORY" and a "BROADCASTING TYPE".
Here, the "PROGRAM CATEGORY" represents a type of a program
such as, for example, a news, an entertainment or a movie,
and the "BROADCASTING TYPE" represents, for example,
stereo, bilingual, clear vision or the like.

[0024]

Meanwhile, the A2 data is composed of, in this
instance, as seen in FIG. 4(B), data representative of "A2
DATA TAG" representing that the data is A2 data, "A2 DATA
SERIAL NO." representative of a serial number of the A2
data, "PROGRAM NAME", "SUB TITLE", "PERFORMER NO. [0]",
..., "PERFORMER NO. [N]", "PROGRAM DETAIL INFORMATION NO.",
"STILL PICTURE NO.", "VOICE NO." and "MOVING PICTURE NO.".

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[0025]

Where the A3 data is data regarding a performer,
the A3 data is composed of "A3 DATA TAG" representing that
the data is A3 data, "PERFORMER NO.", "PERFORMER NAME" and
"PERFORMER INFORMATION". Where the A3 data is data of
program detail information, the A3 data is composed of "A3
DATA TAG", "PROGRAM DETAIL INFORMATION NO." and "PROGRAM
DETAIL INFORMATION". Meanwhile, where the A3 data is data
of a still picture, the A3 data is composed of "A3 DATA
TAG", "STILL PICTURE NO." and data of "STILL PICTURE".
Where the A3 data is voice data, it is composed of "A3 DATA
TAG", "VOICE NO." and "DATA OF VOICE". On the other hand,
where the A3 data is data of a moving picture, it is
composed of "A3 DATA TAG", "MOVING PICTURE NO." and "DATA
OF A MOVING PICTURE".

[0026]

Those A data (A1 to A3 data) is provided to a user
via a medium such as a telephone line, a CD-ROM, a DVD or
the like. Meanwhile, the data of a screen layout are
recorded on a recording medium such as a CD-ROM or a DVD on
which an electronic program guide is recorded and is
provided to a user. Naturally, while it can be provided by
a transmission medium such as broadcasting radio waves or a
telephone line, in order to raise the speed upon

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displaying, the former method is preferable.

[0027]

A user has such an AV system as shown in FIGS. 1 and 2, and A data and data of a screen layout provided through each medium mentioned above are inputted via the antenna, telephone line, CD-ROM driving section 11 or the like, fetched by the microcomputer 15 and stored into the memory 18. A1 data, A2 data and A3 data stored in the memory 18 are read out by the data converting section 20, and necessary items are extracted from those data in response to the layout of the display screen to produce B data.

[0028]

The B data is composed of B1 data and B2 data as seen in FIG. 5. The constructions and the data contents of the B1 data and B2 data are different depending upon the screen layout, and for example, in the case of a program table screen for displaying programs of a predetermined broadcasting date, program frames for 24 hours are taken by the B1 data as seen in FIG. 5(A).

[0029]

In particular, the B1 data is composed of "B1 DATA TAG" representing that the data is B1 data, "B1 DATA SERIAL NO." representing a serial number of the B1 data, "B2 DATA

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SERIAL NO." representing a serial number of the B2 data

corresponding to the B1 data, "BROADCASTING DATE",

"BROADCASTING STATION", program frames "0:00 PROGRAM

FRAME", "0:10 PROGRAM FRAME", ..., "23:50 PROGRAM FRAME"

set for individual predetermined times, and so forth.

[0030]

Meanwhile, the B2 data is composed of, in addition

to "B2 DATA TAG" representing that the data is B2 data, "B2

DATA SERIAL NO." representing a serial number of the B2

data and "B2 DATA CAPACITY" representative of the capacity

of the B2 data, "STACK #1" to "STACK #N" in which serial

NO. of A1 data are described. And, when a program table

screen of such a screen layout as shown in FIG. 5(C) is to

be displayed, for example, in the stacks #1 to #N, the

serial NO.. of the A1 data corresponding to individual

times of the program table are placed.

[0031]

On the other hand, when to display such a program

detail information screen for displaying detailed

information of programs as shown in FIG. 6(C), the data

converting section 20 searches for programs to be displayed

in program detail information for individual categories and

places the serial NO. of the A1 data corresponding to a

predetermined category into the individual stacks of the B2

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data. The format of the B2 data is similar, as seen in FIG. 6(B), to that of the program table screen shown in FIG. 5(B). Meanwhile, for the B1 data, a number of frames of program detail information equal to the number of display programs are taken, and the stack NO. of B2 data is placed in a corresponding one of the frames of program detail information.

[0032]

In particular, the B1 data is composed of, as seen in FIG. 6(A), "B1 DATA TAG" representing that the data is B1 data, "B1 DATA SERIAL NO." representing a serial number of the B1 data, "B2 DATA SERIAL NO." representing a serial number of the B2 data corresponding to the B1 data, "CATEGORY", "PAGE" and "PROGRAM DETAIL INFORMATION #1", ... "PROGRAM DETAIL INFORMATION #6". Here, while the number of frames of program detail information is 6 in conformity with the layout of the program detail information screen, it may be varied in accordance with the layout.

[0033]

Using the B1 data and B2 data produced in this manner and the screen layout data supplied through a CD-ROM 6 or the like, the data converting section 20 produces C data (display data) which is used as original data when to be converted into an EPG processing language. Further, in

order to cope with a case wherein data of a screen layout is not supplied from a CD-ROM 6 or the like, it is also possible to record data of a standard screen layout in advance in the memory 18 of the microcomputer 15. This C data refers to the A1 data, A2 data and A3 data via the B1 data and B2 data.

[0034]

The C data produced in this manner undergoes display conversion processing by the data converting section 20, and an EPG display is provided on a screen of the television receiver 5 or the like under the control of the browser control section 19. In this instance, an EPG for a medium by which program information is provided to the user is produced and displayed. For example, when provision of program information is received through a CD-ROM, an EPG including a still picture in addition to characters is displayed. On the other hand, when provision of program information superposed on a television signal by broadcasting radio waves is received, an EPG composed only of simple character information is displayed.

[0035]

FIG. 7 illustrates a manner in which C data are produced from A data, B data and data of a screen layout in such a manner as described above. Each arrow mark

indicates a direction in which data is referred to. In particular, the A3 data is referred to by the A2 data, and the A2 data is referred to by the A1 data. The A1 data is referred by the B2 data, and the B2 data is referred to by the B1 data. And, the B1 data and the data of a screen layout are referred to by the C data. Accordingly, the C data can refer to the A3 data via the B1 data, B2 data, A1 data and A2 data.

[0036]

FIG. 8 illustrates a relationship between the data amount of the A data and the transmission method. As seen in FIG. 8, it is also possible to provide, for example, only the A1 data and the A2 data in a superposed relationship with a vertical blanking period (VBI) of a television signal to the user. Information which additionally includes CM information, performer information, program detail information and other character information can be provided by a floppy disc (FD) or a telephone line. Information which additionally includes a still picture of a CM, a still picture of a performer, a still picture of a program and other still pictures can be recorded onto and provided as a CD-ROM. Further, information which additionally includes data of moving pictures and voice of a CM, moving pictures and voice of a

program and so forth can be provided by a DVD or a like. In this manner, data can be used individually or in combination.

[0037]

Since the data amount varies depending upon the combination of those informations, a different EPG can be produced by changing the combination of media. For example, data to be provided are different depending upon what combination of a VBI of a television signal, a telephone line, a floppy disc, a CD-ROM and a DVD media by which data are to be provided are. Accordingly, also an EPG to be displayed is different depending upon data to be provided.

[0038]

Also by the PDA unit 4, an EPG is produced in a basically similar manner as described above and displayed on a screen of an LCD or the like.

[0039]

The user can manually operate the mouse 2 or the like to select a desired program or effect program reservation based on a program table and program detail information displayed on the screen of the television receiver 5 in such a manner as described above. Similarly, the user can manually operate a predetermined operation

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section to select a desired program or effect recording

reservation based on a program table and program detail

information displayed on the screen of the PDA unit 4.

[0040]

Further, various media can be used individually or

shared. While, for example, EPG displaying is performed

using only program information transmitted thereto in a

superposed relationship with a VBI of a television signal

or EPG displaying is normally performed using program

information of a CD-ROM, when the broadcasting time of a

program or the like is changed, it is also possible to

transmit only information of the changed program (change

information) in a superposed relationship with a VBI of a

television signal or through a telephone line.

[0041]

In the embodiment described above, actual data are

stored one by one as A1 to A3 data. Accordingly, since a

plurality of data shared by a plurality of screens are not

provided in an overlapping relationship, much information

can be stored by a comparatively small capacity. Further,

since data are stored in the form of cards individually for

a plurality of kinds (in this instance, the data are stored

in a hierarchized state as A1 data, A2 data and A3 data),

necessary information can be transmitted by a necessary

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amount.

[0042]

Further, since an EPG screen conforming to information transmitted thereto can be produced, even if a plurality of media are used so that those may exist simultaneously or are used individually in order to provide data of program detail information of a program table to a user, an EPG screen conforming to the provided data can be produced.

[0043]

It is to be noted that, while, in the embodiment described above, data regarding a program table are recorded on a CD-ROM 6 and read out from it, they may be recorded on and read out from a recording medium of a large capacity such as a DVD (digital versatile disc).

[0044]

Further, while, in the embodiment described above, it is described that an electronic program guide is provided by a medium and displayed, the present invention is not limited to this, and by changing the information to be provided, the present invention can be applied, for example, also to catalog shopping, a karaoke book, a picture book, a travel magazine and so forth and information of a photograph, a picture, sound, moving

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pictures and so forth can be provided in addition to
character information so that it may be displayed on a
screen of a television receiver or a display so as to be
utilized.

[0045]

[Effects of the Invention]

As described above, with the information providing
system as set forth in claim 1 and the information
providing method as set forth in claim 8, since first
information composed of hierarchized data is provided and
second information regarding a layout when the first
information is to be displayed on a screen is provided, and
then, predetermined data from within data which composes
the first information is extracted to produce third
information and fourth information is produced based on the
third information and the second information, data can be
hierarchized in accordance with a medium which provides the
first information or data can be hierarchized depending
upon whether or not the data may possibly be changed, and
data can be provided efficiently.

[0046]

With the information displaying apparatus as set
forth in claim 9, the first acquiring means acquires first
information composed of hierarchized data, and the second

acquiring means acquires second information regarding a layout when the first information is to be displayed on a screen, and then, the first producing means extracts predetermined information from the first information to produce third information, and the second producing means produces fourth information based on the third information and the second information, and the display controlling means performs display conversion processing for the fourth information so as to be displayed on the screen. Consequently, provision of data hierarchized in accordance with a medium which provides the first information can be received or provision of data hierarchized depending upon whether or not the data may possibly be changed can be received, and data can be acquired and displaced efficiently.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[FIG. 1]

FIG. 1 is a view showing an embodiment of an AV system to which an information providing system of the present invention is applied.

[FIG. 2]

FIG. 2 is a block diagram showing an example of a construction of a CD-ROM drive 1 of FIG. 1.

[FIG. 3]

FIG. 3 is a view for explaining a procedure of converting data of a program table and data of a screen layout into an EPG processing language and displaying an EPG.

[FIG. 4]

FIG. 4 is a view showing an example of a construction of data (A data) of an electronic program table.

[FIG. 5]

FIG. 5 is a view showing an example of a construction of B data for displaying an electronic program table.

[FIG. 6]

FIG. 6 is a view showing an example of a construction of B data for displaying a program detail information screen.

[FIG. 7]

FIG. 7 is a view illustrating that C data are composed of B data which refers to A data and data of a screen layout.

[FIG. 8]

FIG. 8 is a view illustrating a relationship between types of information to be provided through media and the media.

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[Description of Reference Numerals]

1 CD-ROM drive, 2 mouse, 4 PDA unit (display means), 5 television receiver (display means), 6, 8 CD-ROM (first providing means, second providing means), 11 CD-ROM driving section (first acquiring means, second acquiring means), 14 TEL module, 15 microcomputer (first producing means, second producing means), 16 VRAM, 17 graphic engine, 18 memory, 19 browser control section (display controlling means), 20 data converting section (converting means)

[NAME OF THE DOCUMENT] Abstract

[ABSTRACT]

[SUBJECT] To hierarchize information of a program table or the like to allow the information to be provided efficiently.

[SOLVING MEANS] Data of an electronic program guide to be provided is hierarchized into data (A1 data) which may possibly be changed such as the broadcasting date, the start time and the end time, data (A2 data) which are not changed at all such as a program name, and data (A3 data) composed of still pictures, moving pictures, voice and so forth which have comparatively large data amounts, and for each medium, data of a hierarchy suitable for the medium is provided. An A3 data is referred to by one or a plurality of A2 data, and each A2 data is referred to by one or a plurality of A1 data.

[SELECTED FIGURE] FIG. 8

In the drawings:

FIG. 1

        1 ... CD-ROM DRIVE

        2 ... MOUSE

        5 ... TELEVISION RECEIVER

      Below 5, from left

        TO TELEPHONE LINE

        TO TELEVISION

        TO ANTENNA

FIG. 2

        11 ... CD-ROM DRIVING SECTION

        14 ... TEL MODULE

      Above 14 ... ANTENNA

        15 ... MICROCOMPUTER

        19 ... BROWSER CONTROL SECTION

        20 ... DATA CONVERTING SECTION

FIG. 3, from above, from left

        INFORMATION INPUT

        LAYOUT INPUT

        EDITOR

        DATA EDITOR

        LAYOUT EDITOR

FIG. 4A, from above

A1 DATA

FOR REGULAR BROADCASTING

A1 DATA TAG

A1 DATA SERIAL NO.

A2 DATA SERIAL NO.

BROADCASTING DATE

START TIME

END TIME

BROADCASTING STATION

PROGRAM CATEGORY

BROADCASTING TYPE

FOR RE-BROADCASTING

A1 DATA TAG

A1 DATA SERIAL NO.

A2 DATA SERIAL NO.

BROADCASTING DATE

START TIME

END TIME

BROADCASTING STATION

PROGRAM CATEGORY

BROADCASTING TYPE

FIG. 4B, from above

A2 DATA

A2 DATA TAG

A2 DATA SERIAL NO.

PROGRAM NAME

SUB TITLE

PERFORMER NAME NO. [0]

PERFORMER NAME NO. [N]

PROGRAM DETAIL INFORMATION NO.

STILL PICTURE NO.

VOICE NUMBER

MOVING PICTURE NO.

EXAMPLE OF DATA (A DATA) OF ELECTRONIC PROGRAM

TABLE

FIG. 4C, from above

A3 DATA

A3 DATA TAG

PERFORMER NO.

PERFORMER NAME

PERFORMER INFORMATION

A3 DATA TAG

PROGRAM DETAIL INFORMATION NO.

PROGRAM DETAIL INFORMATION

A3 DATA TAG

STILL PICTURE NO.

STILL PICTURE

A3 DATA TAG

VOICE NO.

VOICE

A3 DATA TAG

MOVING PICTURE NO.

MOVING PICTURE

FIG. 5A, from above

B1 DATA

B1 DATA TAG

B1 DATA SERIAL NO.

B2 DATA SERIAL NO.

BROADCASTING DATE

BROADCASTING STATION

0:00 PROGRAM FRAME

0:10 PROGRAM FRAME

23:50 PROGRAM FRAME

FIG. 5B, from above

B2 DATA

B2 DATA TAG

B2 DATA SERIAL NO.

B2 DATA CAPACITY

STACK #1

STACK #2

STACK #3

STACK #4

STACK #N

FIG. 5C, from above, from left

SCREEN LAYOUT

DATE

PROGRAM TABLE

PERFORMER INFORMATION

COMMAND

EXAMPLE OF DATA (B DATA) OF ELECTRONIC PROGRAM

TABLE

FIG. 6A, from above

B1 DATA

B1 DATA TAG

B1 DATA SERIAL NO.

B2 DATA SERIAL NO.

CATEGORY

PAGE

PROGRAM DETAIL INFORMATION #1

PROGRAM DETAIL INFORMATION #2

PROGRAM DETAIL INFORMATION #6

FIG. 6B, from left

B2 DATA

B2 DATA TAG

B2 DATA SERIAL NO.

B2 DATA CAPACITY

STACK #1

STACK #2

STACK #3

STACK #4

STACK #N

EXAMPLE OF DATA (B DATA) OF ELECTRONIC PROGRAM

TABLE

FIG. 6C, from above, from left

SCREEN LAYOUT

PROGRAM CATEGORY

PAGE

PROGRAM DETAIL INFORMATION #1

PROGRAM DETAIL INFORMATION #2

PROGRAM DETAIL INFORMATION #3

PROGRAM DETAIL INFORMATION #4

PROGRAM DETAIL INFORMATION #5

PROGRAM DETAIL INFORMATION #6

COMMAND

PROGRAM NAME

BROADCASTING DATE/TIME, BROADCASTING STATION

STILL PICTURE

PROGRAM DETAIL INFORMATION

FIG. 7, from above, from left

C DATA

C DATA

C DATA

SCREEN LAYOUT

B1 DATA

SCREEN LAYOUT

B1 DATA

SCREEN LAYOUT

B1 DATA

B2 DATA

B2 DATA

A1 DATA

A1 DATA

A2 DATA

A3 DATA

A3 DATA

A3 DATA

FIG. 8, from above, from left

BROADCASTING VBI

A1 DATA

A2 DATA

A1 DATA

CM INFORMATION

PERFORMER INFORMATION

PROGRAM DETAIL INFORMATION

OTHER INFORMATION

CM INFORMATION

CM STILL PICTURE

PERFORMER STILL PICTURE

PROGRAM STILL PICTURE

OTHER INFORMATION

CM STILL PICTURE

CM MOVING PICTURE VOICE INFORMATION

PROGRAM MOVING PICTURE VOICE INFORMATION

CM MOVING PICTURE VOICE INFORMATION